

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 57-116627

(43)Date of publication of application : 20.07.1982

(51)Int.Cl. B29H 3/00

B29H 3/00

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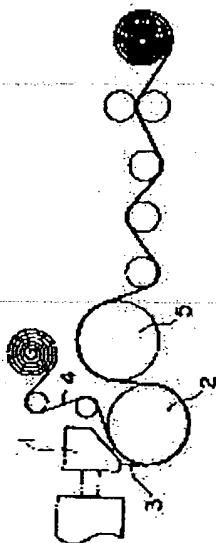
(54) PRODUCTION OF POLYURETHANE SHEET

(57)Abstract:

PURPOSE: To prevent the sticking of a sheet to a roll and the blocking between sheets by a method wherein a releasing paper or the like is inserted along the first cooling roll at the position where a molten sheet of thermoplastic polyurethane elastomer comes into contact with the roll.

CONSTITUTION: At the position where the urethane sheet 3 extruded from a die 1 in a plastic state comes into contact with the first cooling roll 2 to be cooled along the roll 2, a releasing paper or a paper coated with olefin base resin or an olefin base resin film 4 is inserted between the sheet 3 and the roll 2.

Accordingly, it is possible to prevent the sheet 3 in the plastic condition from sticking to the roll 2. Therefore, it is possible to eliminate the problem of blocking between sheets after winding up due to the sticking to the cooling roll.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

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lamination metal plate manufacture method of ***** (ing) a thermoplastics film to the metal substrate 1.

[0047] Regulation of film ** or a surface state is easy for this method. For example, it is also easy regulation of surface gloss and to give an embossing pattern to a front face.

[0048] As for the metal substrate 1 with which the elevated-temperature melting resin 3 was covered, cooling ***** is performed. Even if cooling may perform a water spray for example, after air cooling and it makes it pass through a water-cooled tub, you may let a cooling roller pass.

[0049] Thus, although the surface treatment metal plate of this invention is obtained In this invention, the resin which carried out the overcoat is sprayed in a cooling medium. Or a cooling medium is injected and it cools beforehand. or -- or it carries out the pressure welding of the cooling roller or a resin carries out the pressure welding of the cooling roller for the crosswise both ends of the roll with a volume of a portion by which an overcoat is carried out -- and -- It is made easy to promote cooling and solidification of a resin, to reduce the adhesion force of a roll front face with a volume, and an overcoat resin, and to exfoliate from a roll with a volume by using together these two or more methods.

[0050] If the temperature of a resin is high, it is sticky, it attaches and is easy to adhere to a roll with a volume, and since the resin itself is soft, it will be torn off and will coil around a roll with a volume.

[0051] Moreover, it is made easy to reduce the adhesion force with a resin, and to promote cooling and solidification of a resin, although it is indirect, and to exfoliate from a roll with a volume by lowering the temperature of a roll front face with a volume.

[0052] Next, a drawing explains this.

[0053] Drawing 2 is explanatory drawing explaining the case where inject a cooling medium on the front face of the thermoplastics film 3, and it cools through a cooled nozzle 10 on it. It may replace with a cooled nozzle or a cooling roller may be used simultaneously.

[0054] As a cooling medium, **** (the shape of a fog), liquid nitrogen, etc. which air mixed with air, water, and water are suitable from economical efficiency or refrigeration capacity.

[0055] Moreover, a screen 9 is formed in the edge of a metal plate, and you may make it a cooling medium not start a metal plate, as shown in drawing 3, so that the metal plate itself may not be cooled.

[0056] By the cooled nozzle 10, drawing 4 shows the example for which drawing 5 has cooled the crosswise both ends of a roll with a volume by the cooling roller 11, respectively.

[0057] In addition, the roll with a volume has a product made from Teflon, or a desirable product made from silicon, in order to weaken the adhesion of a resin.

[0058] Moreover, as a cooling roller, a point to the copper or iron of the cooling effect is suitable.

[0059] An example explains below.

EXAMPLE

[Example] After preheating this steel plate at 200 degrees C by the thickness of 0.2mm using the lamination metal plate manufacturing installation which used the roll with a volume with an outer diameter of 450mm, and the nip roll (sticking-by-pressure roll) with an outer diameter of 200mm, using a surface treated steel sheet with a width of face of 800mm as a metal plate, melting extrusion flowing down of the polyethylene-terephthalate resin was carried out from the T die through the extruder at the interface of the above-mentioned steel plate front face and the above-mentioned nip roll.

[0061] The temperature of a melting resin is 280 degrees C, covering thickness is 50 micrometers, covering width of face is 860mm, it covers more widely 30mm of both sides at a time than a steel plate, and line speed is 20 m/min, and the angle which twists a steel plate

around a roll with a volume is 90 degrees after a pressure welding.

[0062] (1) Air was sprayed until it used the air jet hole for the front face of the resin which carried out the overcoat after the pressure welding and carried out the steel plate coiling-round end.

[0063] Without adhering to a roll with a volume, it was stabilized and the overcoat resin has been operated. At this time, the screen was prepared in the edge of a steel plate so that a cooling medium might not start a steel plate side.

[0064] (2) The cooling roller of a method which uses an air jet hole for a roll front face with a volume, and sprays air, and pours water to the copper interior with an outer diameter of 50mm by width of face of 30mm was contacted on the front face, and the roll front face with a volume was cooled.

[0065] Without adhering to a roll with a volume, it was stabilized and the overcoat resin has been operated.

[0066] (3) Above (1) and (2) were compounded and carried out. this case -- satisfactory -- it can operate -- further -- more -- high speed -- line speed -- also raising (about 40 m/min) -- it has operated good

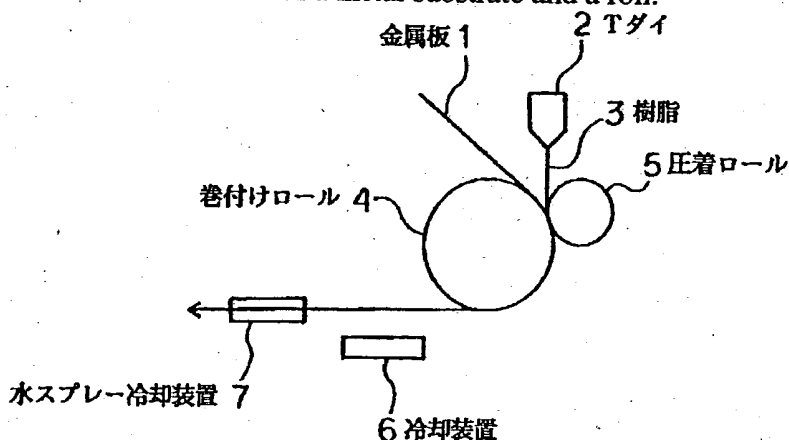
[0067] Moreover, when [condition of (3)] operation was performed like the above near [where the resin which disturbed contacts] the roll surface portion using the roll with a volume which prepared puncturing rather than the steel plate as shown in drawing 6, line speed was gathered at still high speed, and at least about 50 m/min has operated good.

[0068] When it operated without cooling in the above-mentioned example as an example of comparison, the resin protruded from the metal plate coiled around the roll with a volume which has twisted the metal plate immediately, and became operation impotentia on it.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is explanatory drawing of the method of covering by flowing down a melting resin to the interface of a metal substrate and a roll.



[Drawing 2] Explanatory drawing of the example which cools a resin side by the cooled nozzle.